PROPOSALS

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FOR

RECOVERING PERSONS

APPARENTLY DEAD

BY

DROWNING,

AND

SUFFOCATION

FROM

OTHER CAUSES.

PUBLISHED BY ORDER OF
THE GOVERNORS OF THE NEWCASTLE DISPENSARY.

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Doctor Lettsome
wt
Dr. Clark's compliments

BRITISH MUSEUM

PROPOSALS
FOR THE
RECOVERY OF PERSONS
APPARENTLY DEAD
BY
DROWNING, &c.

THE Reports of ſeveral eſtabliſhments on the Continent, as well as of the Humane Society in London, have fully proved, that perſons apparently dead from drowning, or ſuffocation from other cauſes, may, by proper means, be reſtored to life. But, whilſt the ſucceſs which has attended theſe eſtabliſhments, muſt give pleaſure to every perſon intereſted in the cauſe of humanity, it is to be regretted, that the means of reſtoration have not been more publicly underſtood, and more generally adopted.

The frequent inſtances of death, by drowning, which have happened upon the river Tyne, the equally fatal effects from ſuffocation in the coal-pits, and the unſucceſsful attempts of recovery, have afforded the ſtrongeſt proofs, that the methods of reſtoration have not been known, or have not been ſpeedily or properly applied.

To awaken the attention of the public to the probability of recovering the *apparently dead*, and to afford all poſſible relief to *drowned* perſons, the Governors of the NEWCASTLE DISPENSARY have eſtabliſhed a department of their Charity, on the following plan:—

PLAN.

1ſt. The Governors of the Diſpenſary, in order that the more diſcerning part of the community may form an idea of the ſubject, ſhall diſtribute, in an extenſive manner, a pamphlet, containing remarks on the nature of different kinds of apparent death, by the MEDICAL SOCIETY of Newcaſtle.

2d. They

2d. They ſhall circulate, by way of hand-bill, ſhort rules, to be obſerved by the ſpectators for endeavouring to recover perſons apparently dead by *drowning*; by *ſuffocation* from the *noxious vapours of coal-mines*; and other cauſes.

3d. They ſhall engage receiving-houſes near the river, at Newcaſtle, North and South-Shields, at Howdon Dock, and Lemington, for the accommodation of drowned perſons. And, when accidents happen at a diſtance from the receiving-houſes, they will defray the expence, which any publican or other perſon may ſuſtain by receiving the unfortunate object into his houſe.

4th. The inſtruments and medicines neceſſary for the purpoſe of reſtoration, incloſed in a proper box, ſhall be kept at the receiving-houſes, that the Medical Aſſiſtants may procure them without delay.

5th. Medical Gentlemen, reſiding near the places where accidents from drowning uſually happen, ſhall be engaged to give their aſſiſtance.

6th. A premium of one ſhilling ſhall be given to the meſſenger who ſhall bring the firſt SURGEON to the aſſiſtance of the drowned perſon.

7th. The Medical Aſſiſtants ſhall be empowered to diſtribute a reward, not exceeding five ſhillings, to the perſons they ſhall employ to aſſiſt in the methods of recovery, provided they perſevere in the means recommended, for four hours or upwards.

8th. If the unfortunate perſon be in ability, and recover, it is to be underſtood, that he ſhall defray the expence of his accommodations; or if he cannot be reſtored, the ſame is expected from his relations.

November 24, 1789.

⁂ **SUBSCRIPTIONS** *for this Department of the Diſpenſary, are received by* **R. ORMSTON, Eſq;** *at the Tyne-Bank.*

REMARKS
ON
DIFFERENT KINDS
OF
APPARENT DEATH.

INTRODUCTION.

1. THE MEDICAL SOCIETY of Newcaſtle, in compliance with the requeſt of the GOVERNORS of the Diſpenſary, have inveſtigated the nature of *apparent death*, ariſing from the cauſes which become the object of the preceding plan, with care and attention: And, in the following Remarks, they have chiefly ſtudied conciſeneſs, plainneſs, and preciſion, that the public, at large, may underſtand a ſubject, in which they are ſo peculiarly intereſted.

2. Apparent death conſiſts in a total, tho' temporary ceſſation of all the powers of motion and ſenſe; to be more particular, the lungs ceaſe to act; the heart and arteries to beat; and the brain and nerves to diffuſe their energy. It, therefore, only differs from real death, in this, that the living principle is not extinct, but only lies dormant; which, ſometimes ſpontaneouſly, but more frequently and certainly, when excited by proper means, again becomes active: In conſequence of which, all the functions of life are reſtored.

3. The common opinion, that life deſerts the body as ſoon as the breath ceaſes, is not confined to the vulgar alone; but, notwithſtanding the inſtances of recovery from apparent death, is ſtill believed by many of the more diſcerning part of the community. As this opinion has been productive of the moſt dangerous conſequences, the SOCIETY wiſh to impreſs the public with the following truth; that the living principle, in every caſe of death, keeps poſſeſſion of the body for ſome time, at leaſt, after all the actions of life have diſappeared; nay, probably, it never entirely leaves the body, ſo long as any degree of animal heat remains in the internal parts.

4. By proper attention to theſe circumſtances (2. 3.), the SOCIETY flatter themſelves, that perſons ſuddenly and apparently

dead

dead, eſpecially from the cauſes, to be afterwards enumerated, will, for the future, not be conſidered to be *really* dead, till ſuch time as the methods of reſtoration have had a fair trial.

5. But whilſt the SOCIETY endeavour to animate the public, to uſe every exertion to recover thoſe apparently dead, they do not wiſh to conceal the great uncertainty of a ſucceſsful termination. In drowning, eſpecially, the methods of treatment prove unſucceſsful, from the perſon lying too long under water; from his being ſuddenly ſeized with other diſeaſes, or being in a ſtate of intoxication, at the time of the accident; and from various other cauſes. But, in ſuch dangerous ſituations, if *one* in *fifty* can be reſtored, it will amply compenſate for many fruitleſs attempts. If, however, any perſon conceive this to be a ſmall proportion, let him but for a moment conſider, if this *one* ſhould happen to be his own ſon, or a beloved friend, with what raptures he would extol the means which had averted the moſt poignant diſtreſs!

On the Nature of APPARENT DEATH from DROWNING, and on the moſt effectual Methods of Recovery.

6. From various experiments, inſtituted by different members of the SOCIETY, the following appearances have been obſerved to take place in drowning, to which the attention of the reader is requeſted, as not only pointing out the nature of the death, but the methods, which ought to be employed to effect a recovery.

7. When an animal is kept under water, in a few ſeconds it begins to emit its breath forcibly, ſo as to occaſion air bubbles. This emiſſion of air from its lungs is followed with as ſtrong a deſire to draw in air, and, in theſe efforts, it commonly inſpires water (*a*). Its ſtruggles, in a few minutes, become imperceptible, and it falls down motionleſs. Upon taking it out of the water, provided only eight or ten minutes have elapſed after all its ſtruggles are over, the noſe and mouth appear remarkably pale, the eyes do not protrude, and the pupils, tho' they nearly retain their natural luſtre, are quite dilated; all ſenſe and motion, both external and internal, except a ſlight contraction of the right ſide of the heart, are now loſt; and if no means of recovery be

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(*a*) As it was thought of conſequence to aſcertain this point; a cat, ſix weeks old, was frequently immerſed in a ſtrong ſolution of copperas, and as frequently allowed to come above the ſurface to inſpire, in order to imitate what frequently happens in drowning. It was at laſt brought up, before it was dead, and inſtantly ſtrangled. Upon diſſection, the frothy fluid in the lungs, and the lungs themſelves, became as black as ink, upon adding a tea-ſpoon full of infuſion of galls to the former, and moiſtening the lungs with a little of the ſame infuſion. The experiment, with the ſame reſult, was repeated on a young whelp.

be made uſe of, the body gradually becomes cold, and with the loſs of heat, the heart loſes the power of contraction.

8. Upon diſſection, no fulneſs in the veſſels within the ſkull, nor any diſeaſe in the brain, or its membranes, are to be found. The lungs alſo appear ſound; are generally about half diſtended, but ſometimes more, when the animal is frequently allowed to come to the ſurface of the water, ſo that he may inſpire. A quantity of frothy fluid (*b*), conſiſting of air and mucus, with a little of the water in which the animal was drowned, in every experiment except one, was ſqueezed from the lungs.

9. The right-ſide of the heart is full of black blood, and the large veins going out from this ſide of the heart, thro' their whole courſe, to the middle of the thighs, the arm-pits, and almoſt to the jaws, are full of blood of the ſame colour. The left-ſide of the heart is almoſt empty, which is alſo the caſe with the whole of the large arteries, except the trunks of the artery which enters the lungs, which is commonly filled with blood. The external blood-veſſels are empty, and the muſcles commonly look as white as if the animal had been bled to death.

10. Upon the whole, it appears (8. 9.), that no injury is done to the organization of the vital parts; but that the heart and large veins, in its neighbourhood, are diſtended with blood, whilſt every other part ſeems, in a great meaſure, to be drained of that fluid. Nor are theſe circumſtances invalidated by the appearances, which have been obſerved in ſome bodies of drowned perſons, who are never opened till many hours after death; for altho', in a few, the veſſels of the brain have been found full of blood, yet, generally, this organ, as alſo the lungs, have been found in a ſound ſtate. Neither does the prominent, or bloodſhot eye, the ſwelled bloated face, or the lividity of the ſkin, which are ſo often obſerved in drowned perſons, who have been long under water, prove any thing more, than that the blood, after death, had drained to depending parts.

11. From what has been advanced, in the three preceding paragraphs, it appears, that the firſt cauſe of the ſuſpenſion of the vital motions in drowning, is the ſtoppage of reſpiration; in conſequence of which the circulation cannot be carried on, and the blood, therefore, is accumulated in the right-ſide of the heart, and in all the large internal veins. With this ſtoppage of the cir-

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(*b*) By drowning a large old cat, and a kitten of four weeks old, in a ſolution of copperas, one ounce of frothy fluid was found in the air veſſels of the lungs of the former; and one dram and a half of the ſame fluid in the latter: By adding a ſtrong infuſion of galls, the fluid in both became black, and as near as could be aſcertained, the quantity of ſolution of copperas, in the lungs of the former amounted to two drams; and in the latter to two ſcruples. But, in one experiment, made by another member of the Society, the water in the lungs of a drowned whelp of five weeks old, was much more conſiderable; and water was alſo found in its ſtomach.

circulation, the brain loſes its energy, the body becomes cold, and with the total loſs of heat, it may be reaſonably ſuppoſed that the principle of life is extinguiſhed *(c)*.

12. From this view of the ſubject, the moſt likely means to reſtore perſons apparently dead by drowning, will conſiſt: 1ſt, in renewing the action of the lungs, without which the accumulation of blood about the heart cannot be removed; nor the heart itſelf be brought into proper motion; And 2d, in ſupporting a due degree of animal heat, without which the vital principle cannot, with effect, exert its influence.

13. To reſtore the action of the lungs, it is indiſpenſably neceſſary that they ſhould be inflated. When the perſon has not been long under water, perhaps blowing air into the mouth or noſe with a wooden pipe may be all that is neceſſary to put them into motion. But in many caſes, it will require great ſkill to inflate them effectually. As the directions for doing this with inſtruments will be given in another place *(d)*, it would be improper to enlarge on them here. It muſt, however, be obſerved, that the inflation ought not to be done with violence, but ſo as to imitate natural, eaſy reſpiration. And as, in many caſes, the inflation ought to be continued for one or two hours, it will be neceſſary to employ a pair of bellows. But it muſt be obſerved, as ſoon as the pulſe returns, the inflation ſhould be gradually leſſened, and, in a little time, totally laid aſide.

14. By artificial breathing (13.), judiciouſly and aſſiduouſly employed, not only the frothy fluid, already taken notice of (8.), which renders the recovery from drowning more uncertain than other caſes of ſuffocation, will be expelled; but the heart will moſt likely be put into motion, by which the accumulation of the blood there, and in its neighbourhood (9.10.), will alſo be removed, and the circulation reſtored.

15 At the ſame time, that the meaſures recommended (13.) are aſſiduouſly employed, other aſſiſtants ſhould be endeavouring to reſtore, and to keep up a due degree of animal heat. Perhaps the ſpeedieſt method of doing this, (were hot water always in readineſs) would be to put the patient into a warm bath. But as this cannot be ſpeedily procured, but more eſpecially, as it interferes with other eſſential applications, the body muſt be gra-

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(c) Altho' not immediately connected with the ſubject, the Society cannot help entering a caution againſt the haſty cuſtom of laying out perſons ſuppoſed to be dead. In great ſinking of the ſtrength, eſpecially in the end of acute diſeaſes, patients frequently lie in a ſtate exactly reſembling death. If the bed-cloaths be removed, the heat, on which the vital principle depends, will ſoon be diſſipated, and every ſpark of life deſtroyed. By not attending to this circumſtance, it is to be feared, that many have been actually killed, who, by a different treatment, would have recovered.

(d) See the appendix. Paragraph 38, 39, 40, 41.

gradually brought to a proper heat, by placing it on a warm bed, or mattreſs, and by the uſe of general frictions with warm cloths(*e*). The frictions, however, ſhould be at firſt moderate, and performed only with a view to reſtore heat, and not to force the blood towards the heart, which in drowned perſons is generally found too much diſtended (9.10.).

16. If the body has been taken out of the water in froſty weather, eſpecially if it has been afterwards long expoſed to the air, the heat, at firſt, ſhould be applied in a very low degree; and if the thermometer be under the freezing point, and the body, when ſtripped, feel cold, and nearly in a condition with thoſe that are frozen; it will, at firſt, be indiſpenſably neceſſary to make uſe of frictions with ſnow, or cold applications, as heat, in ſuch caſes, has been found pernicious. In a little time, however, heat muſt be gradually employed.

17. Upon the whole, great care and nicety ought to be obſerved in the application of heat, which, in every caſe, ought to be proportioned to the powers of life; for if this circumſtance be not attended to, it is more likely to deſtroy than to recover the patient: But, as the application of heat cannot be exactly regulated without a thermometer, further directions will be given in the appendix *(f)*.

18. Altho' the recovery of drowned perſons depends almoſt entirely upon the methods recommended (12.13.15.16.); yet when the body is in a condition to be acted upon, cordial and invigorating medicines, ſuch as throwing brandy and water into the ſtomach and inteſtines, pepper-mint water, æther, or volitile liquor of hartſhorn, diluted with water, may prove uſeful auxiliaries *(g)*. But the ſame moderation in their uſe muſt be obſerved, as has been recommended in the application of heat.

19. The means for recovering the motion of the lungs, and animal heat, ſhould often be continued for ſeveral hours; for it appears from the reports of the *Humane Society*, that, in a very great number of caſes, one, two, and even four hours, were perſeveringly employed before the firſt ſigns of life appeared *(h)*.

20. Electricity being the moſt powerful of all ſtimulants, it has been recommended by ſeveral ingenious authors *(i)*, and, accord-

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(e) For more particular directions, ſee the Appendix I.

(f) See paragraph 45.

(g) See the Appendix. II. Paragraph 42.

(h) In many caſes of complete recovery recorded by the HUMANE SOCIETY, the perſons were under water twenty, thirty, one forty, and one forty-five minutes, and in theſe caſes, the reſtoration, as might be expected, was tedious.

(i) A. Fothergill, Henly, Hunter, Kite.

according to the reports of the *Humane Society*, has been found ſerviceable in drowning; it ought, therefore, to be tried, when the heart cannot be brought to act by the means mentioned (14.). Shocks, therefore, may be tranſmitted thro' the heart, the head, and the ſpinal marrow; but they ought neither to be employed ſo gently as to produce no effect, nor ſo violently as to do miſchief.

21. The SOCIETY, having recommended all the means which they judge to be indiſpenſably neceſſary to the recovery of drowned perſons (12.13.15.16.), and alſo other means which may be employed as auxiliaries (18.20.), forbear to encroach on the time of the public, by mentioning thoſe practices, in common uſe, which they conſider either to be trivial or pernicious. But they cannot diſmiſs this ſubject without obſerving, that *bleeding* does not ſeem to be indicated, and that it ought *never* to be performed when the circulation begins to return, leſt it ſhould deſtroy the feeble powers of life.

22. As the remarks, which have been already offered, will apply, with a few exceptions, to other caſes of ſuffocation, the SOCIETY ſhall briefly diſcuſs the remaining part of the ſubject.

APPARENT DEATH from HANGING.

23. In hanging, the external veſſels, bringing back the blood from the head, are immediately compreſſed, while the blood is ſtill carried on in the internal arteries. The windpipe is ſoon after ſhut by the cord, the ingreſs of air prevented; in conſequence of this, the face becomes red and livid, and the perſon or animal is ſpeedily carried off by ſuffocation.

24. On diſſection, the blood veſſels of the brain, in ſeveral animals that were ſtrangled, appeared turgid with blood, but no other diſeaſe was obſerved within the ſkull. The lungs were, in general, quite collapſed, free from frothy fluid, and in every reſpect ſound. The heart and large adjoining veſſels exhibited exactly the ſame appearances as in drowned animals (8.9.10.).

25. From this view (23.24.) it would appear, that moderate bleeding from the jugular veins, or cupping in the neck, will be neceſſary to remove the fulneſs of the brain. But when nature makes efforts to relieve herſelf, this evacuation muſt be uſed with great caution; and, when the circulation returns, ought immediately to be ſtopt, leſt it weaken the recovering powers of life. The other methods of treatment ought to be the ſame as recommended for the recovery of drowned perſons.

APPARENT DEATH from NOXIOUS VAPOURS.

26. Noxious vapours ariſe from various ſources; from fermenting liquors, from the fumes of charcoal, of burning quick lime, and

and of metals during their calcination; from opening vaults, draw-wells, wells of ſhips, and ditches long ſhut up; from the damps in mines, &c.

27. In the coal-pits of this neighbourhood, there frequently ariſe two kinds of noxious air. The firſt, uſually termed the *choke-damp*, is a natural fixed air, which being ſpecifically heavier than atmoſpheric air, occupies the bottom of the mine. The other is called the *fire-damp*, which is a natural inflammable air, and being ten times lighter than common air, occupies the top of the mine.

28. From ſome experiments, which would be tedious to relate, it appears that theſe vapours (26.) occaſion a ſuſpenſion of the vital motions, and death, by entering the lungs; and, excluding the atmoſpheric air, and in other reſpects, if the *fire-damp* be excepted when it takes flame (*k*), no farther injury is done to the body.

29. The bodies of animals, ſuffocated in theſe vapours, exhibit the following appearances:—The limbs remain flexible for a long time; the eyes retain their luſtre; the temperature of the body, and even a heat higher than the healthy ſtandard, in ſome inſtances, continue ſeveral hours after death. This is particularly the caſe with animals ſuffocated in the ſteams of charcoal; and in them the blood remains fluid, and even highly florid. In animals ſuffocated in fixed, and in inflammable air, altho' the limbs continue flexible, the blood was not florid. The veſſels of the brain were found turgid in animals ſuffocated in theſe vapours; the lungs were ſound; the heart and adjoining veſſels were equally turgid as in thoſe which were drowned or hanged.

30. The moſt effectual means of recovering the vital actions, when ſuſpended by noxious vapours, conſiſt in inflating the lungs as ſoon as the body is removed to the open air; in ſprinkling the face, and, when the heat is above the ſtandard of health, even the whole body, with cold water. In perſons ſuffocated by the fumes of charcoal, advantages have ariſen from rubbing the body with ſnow. But here the heat ſhould be *only diminiſhed in proportion to the powers of life*; and, therefore, if the body become cold, equal advantage will accrue from the gradual application of warmth. The ſtate of the veſſels of the brain (29.) would ſeem to require bleeding; and accordingly it has been recommended(*l*). Blood may therefore be taken from the jugular veins, or from the neck, obſerving the cautions already given (25.). In

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(*k*) The *fire-damp* frequently takes flame, by which means the pitmen are often miſerably burnt. At the ſame time, others are found without ſigns of life; and as they are erroneouſly ſuppoſed to be burnt to death by the flame, and not ſuffocated by the vapour, methods of reſtoration unfortunately are ſeldom applied.

(*l*) PORTAL.

In all other reſpects, the methods of treatment will be the ſame as in thoſe who are drowned.

APPARENT DEATH from SMOTHERING, and the want of RESPIRATION in ſtill-born CHILDREN.

31. Children, from inattention or other cauſes, are frequently ſmothered in beds. When not overlaid, the functions of life are ſolely ſuſpended by breathing confined air. From experiments upon brutes, it appears that, in this caſe, the lungs are collapſed, and, except the accumulation of blood in the heart, and large veſſels in the neighbourhood, no injury is done to the reſt of the ſyſtem. If the means of recovery, therefore, be not too long delayed after the lungs and heart have ceaſed to act, there will be great hopes of reſtoring the patient. If the body be too hot, as is commonly the caſe, it ſhould be expoſed, at firſt, to a current of air. The lungs ſhould be immediately inflated; and, afterwards, in every other reſpect, it ſhould be treated conformably to what has been recommended in ſuffocation from drowning.

32. In ſuch ſtill-born children as come into the world, in other reſpects, with a healthy appearance, great hopes may be entertained from inflating the lungs, if too much time have not been loſt. But this proceſs ought to be continued aſſiduouſly for ſome hours, by blowing air thro' a quill, or any ſmall tube inſerted into the mouth. The temperature of the body ſhould at the ſame time be kept up by a due degree of warmth; and the blood propelled from the ſurface to the heart by proper frictions.

APPENDIX I.

CONTAINING

RULES to be obſerved by the SPECTATORS in endeavouring to recover perſons apparently dead by drowning.

I.

33. As ſoon as the body is taken out of the water, a perſon muſt inflate the lungs of the patient, by blowing into the mouth, or, (which is better) into one noſtril, thro' a wooden pipe (*m*), a roll of cap-paper, or any thing elſe that will effectually convey the breath up the noſtril; whilſt the other noſtril, together with the mouth, is cloſely ſhut, that no air may paſs otherwiſe than by the pipe. At the time of blowing thro' the pipe, another perſon, in order to prevent the air getting into the ſtomach, muſt gently preſs the projecting part of the windpipe backwards. When the

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(*m*) Wooden pipes or tubes are always in readineſs at the receiving-houſes.---See the plate, figure I.

the lungs are filled, the perſon muſt remove his hand from the mouth and noſe, and preſs the belly and breaſt, ſo as to let the air paſs out. When by theſe means the lungs have emptied themſelves, the blowing thro' the pipe is to be repeated in the ſame manner, ſo that natural breathing, as far as poſſible, may be imitated. If the lungs cannot be, by theſe means, diſtended, it moſt probably will proceed from ſome ſtoppage about the opening into the windpipe, which, if poſſible, ſhould be removed by pulling the tongue forwards, before another attempt be made to inflate the lungs.

II.

33. At the ſame time that air is blowing into the lungs, other by-ſtanders ſhould be employed in ſtripping off all the wet cloaths, and in rubbing the body dry with flannel, or ſuch cloths as can be procured. The body ſhould then be wrapt in a warm blanket, or in the ſpare garments of any of the ſpectators; or, if the weather be favourable, the naked body ſhould be expoſed to the rays of the ſun.

III.

34. If, upon a ſhort trial, theſe methods do not ſucceed in reſtoring the breathing, the body ought to be immediately carried to the neareſt *Receiving-houſe*, or, if it be at any diſtance, to the neareſt building. In removing the body, great care ſhould be taken to keep it in an eaſy poſture, with the head and ſhoulders a little raiſed. It will be beſt conveyed in the arms of two perſons, while a third takes care that the neck be not too much bent forwards, or to one ſide. If the body be taken out at a conſiderable diſtance from any houſe, it ſhould be laid in a cart upon ſtraw, on one ſide, with the head and upper parts raiſed; and, in this poſition, a briſk motion will do no harm.

IV.

35. The body being now conveyed to a houſe, it ſhoud be placed upon a warm bed or mattreſs, and covered with a warm blanket. The head and cheſt ſhould be conſiderably raiſed, but not ſo much as to ſlide down, in which poſition the body ſhould be kept during the whole of the future attempts of recovery. It will now be again indiſpenſably neceſſary to renew the endeavours to reſtore life, by *blowing air into the lungs*, as directed in Rule I; and by *reſtoring a moderate degree of heat*, by gently rubbing the body with warm flannels, or other warm cloths; and by applying bottles full of warm water, wrapped up in flannel, to the feet.

V.

36. The means of cure recommended in Rule I. and II. and more particularly mentioned in the end of Rule IV. muſt be continued for a long time: Perſeverance is abſolutely neceſſary; and it is often only after *two*, *three*, or *four* hours of uninterrupted labour, that the firſt ſigns of life appear.

37. Altho'

VI.

37. Altho' the above methods of cure ought to be immediately begun by any of the by-ſtanders of diſcernment, and have been often attended with the happieſt effect; yet, as the application of the means requires ſkill and dexterity, and as it is frequently abſolutely neceſſary to employ *inſtruments* to inflate the lungs; *one* or *two* of the MEDICAL ASSISTANTS ſhould be called in without delay. The loſs of every moment, or the miſapplication of the means, is attended with the utmoſt danger to the unfortunate object, who is approaching nearer and nearer to a ſtate from which he cannot recover.

APPENDIX II.

CONTAINING

A Deſcription of a Pocket CASE of INSTRUMENTS for the Recovery of Perſons apparently dead, with the Methods of USING them.

38. Many ingenious inſtruments have been recommended by authors, and adopted by different eſtabliſhments in their endeavours to recover the apparently dead; but the MEDICAL SOCIETY have preferred the improvements lately made upon them by Mr SAVIGNY of London, both on account of the utility of the inſtruments, and their being contained in a caſe, which is extremely portable. Some management, however, is required to adjuſt the *inſtruments* to the different purpoſes; but a careful inſpection of the plate, (*n*), and attention to the following directions, will render their application eaſy.

39. When air from the lungs of a healthy perſon is to be uſed, the *ivory mouth-piece* is to be ſcrewed on one end of the *flexible tube of red leather*, and the *ivory nozle* upon its other extremity, by which means, a blow-pipe is completely formed*; which is to be inſerted into the noſtril; and to be managed in the ſame manner as the *wooden pipe* (33.). But as atmoſpheric air *(o)* ſhould be, in moſt caſes, preferred for inflating the lungs properly, the following adjuſtment of the inſtrument will be required: The conical part of the *hollow ſcrew*, by means of the *braſs winch*, is to be firmly ſcrewed into the muzzle of any com-

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(*n*) Mr Savigny's original caſe contained an *apparatus* for injecting the fumes of tobacco, which the SOCIETY have not recommended.

* See the Plate, Figure II.

(*o*) Dephlogiſticated air, diſcovered by Dr Prieſtly, preſerved in bladders, has been recommended by ſeveral authors; but as the expanſion of the lungs ſeems to be the principal object of the inflation, the *Society* think it of little importance whether dephlogiſticated, or atmoſpheric air be uſed; and indeed, thoſe who have recommended the former were never able to recover any animal with it, when atmoſpheric air had been found ineffectual.

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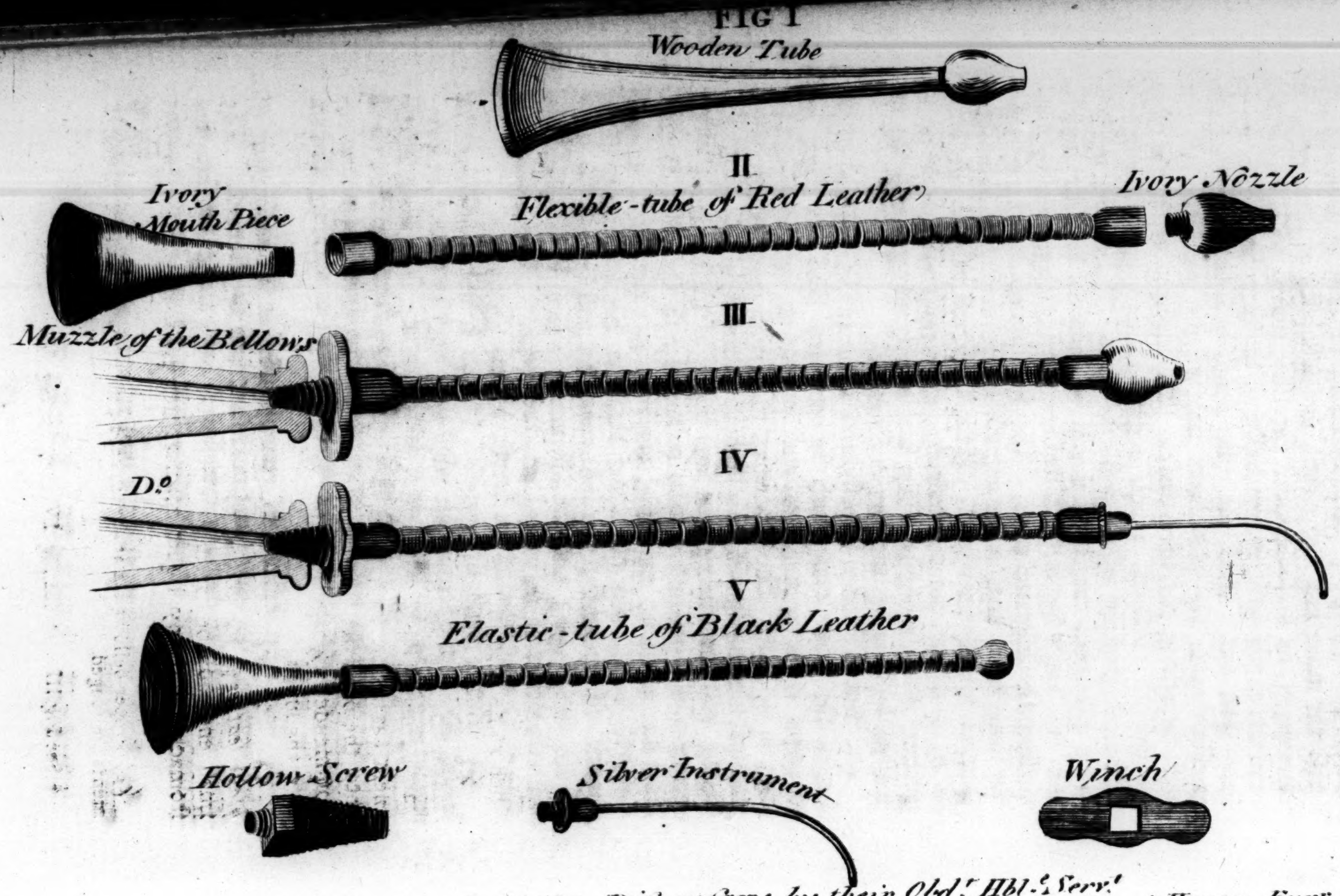

This Plate was presented to the Gov.rs of the Diſpenſary by their Obd.t Hbl.e Serv.t A. Hunter Eng.r common pair of *bellows* (*p*): The *ivory mouth-piece* of the *flexible tube*, is then to be removed, and the other end of the *conical ſcrew* to be fitted in its place. The inſtrument being thus completed †, " a proper perſon, ſtationed at the head of the body, is to paſs the tube into the noſtril, and ſuſtaining it there with the fore-finger, he is to compreſs the other noſtril with his thumb, and the mouth with the remainder of the ſame hand, that no air may paſs out. With the other hand, he is to make a ſuitable preſſure upon the prominent part of the windpipe, to prevent air paſſing into the ſtomach. The medical director is then to work the bellows, which ought, at one play, to throw in a ſufficient quantity of air to fill the lungs. When they are properly diſtended, the hand ſhould be removed from the mouth, and the lungs are to be aſſiſted in emptying themſelves by compreſſing the belly and cheſt. The ſame proceſs is to be repeated for ſome time, that, as far as poſſible, the manner of natural reſpiration may be imitated." If the air do not paſs into the lungs ſo as to diſtend them completely, it probably ariſes from the aperture of the windpipe being ſhut, which may generally be remedied by bringing the tongue forwards.

40. But if farther impediments occur to the inflation of the lungs, the *ivory nozle* muſt be removed, and the *ſilver inſtrument* in the form of a catheter ſcrewed on the *tube of red leather*, in its place. The inſtrument being thus completed ‡, " the medical director ſhould place himſelf on the right ſide of the patient; and introducing the fore-finger of his left hand, at the corner of the patient's mouth, he ſhould puſh the point of it behind the *epiglottis*, and uſing this finger as a directory, he muſt enter the tube, with the other hand, at the left corner of the mouth, till the end of the inſtrument has paſt beyond the point of his fore-finger; and the inſtrument is then to be ſuffered to fall rather than to be puſhed into the *glottis*." The bellows are then to be worked as in the former proceſs (39.).

41. If the methods propoſed (39.40.), fail of inflating the lungs, an opening into the wind-pipe may be made; and certainly ought to be tried as a laſt reſource. The ſilver inſtrument (as in Fig. IV.) fitted with the bellows, ſhould be introduced into the opening, and be worked in the ſame manner as recommended (40.); by which means air will be certainly thrown into the lungs.

42. The next inſtrument recommended is the *elaſtic tube of black leather* §, for conveying medicines into the ſtomach. The ſmall end muſt be carefully introduced down the gullet, into the ſtomach; and any liquid cordial, ſuch as *ſpirits*, *æther*, *volatile*

liquor

(*p*) Proper bellows are always in readineſs at the place where the inſtruments are lodged.

† See Fig. III. ‡ See Fig. IV. § See Fig. V.

liquor of hartſhorn, or *oil of peppermint*, properly diluted with water, muſt be poured in ſmall quantities into the other end of the tube; and if the liquor do not deſcend readily, blowing upon it will make it paſs into the ſtomach.

43. The next inſtrument is a large *bladder*, which may inſtantly be connected with a proper pipe, contained in a diviſion of the caſe. A clyſter prepared with *brandy*, *gin*, or the *oil of peppermint*, largely diluted with warm water, muſt be injected.

44. Altho', from the ſympathy which ſubſiſts betwixt the ſtomach and whole ſyſtem, and the irritability remaining long in the inteſtines, much benefit may ariſe from the proceſſes (42.43.) as auxiliaries; yet no means, unleſs for a very ſhort ſpace, muſt interfere with the more important articles of *inflating the lungs*, and *reſtoring animal heat*.

45. The laſt inſtrument *(q)* is a *thermometer* upon Mr HUNTER's principles, extremely well calculated for aſcertaining the natural heat remaining in the body, and for regulating the application of artificial heat. The freezing point is marked on the ſtem by a ſcratch on the glaſs, and the diviſions upon an ivory ſcale, embracing the glaſs, are eaſily ſeen thro' the ſtem.—By applying this inſtrument to the body, and finding the temperature conſiderably below 98°, artificial heat ſhould be gradually applied till it be uniformly heated to 98°, or 100°. But if the external parts of the body be ſo chilled, that the thermometer ſinks below 32°, ſnow or cold water being, in this caſe, of higher temperature, will be at firſt neceſſary; and the heat ſhould be afterwards increaſed ſlowly and gradually.—The inſtrument may likewiſe be eaſily introduced into any cavity, ſo as to aſcertain the degree of internal heat; which remains, in general, for ſome hours after the external ſurface is cold. Therefore, if it be puſhed three or four inches up the *rectum*, the preſence or abſence of life may be aſcertained by the riſe or fall of Mercury in the tube.

(q) Proper phials for æther, volatile liquor of hartſhorn, and oil of pepper-mint are alſo contained in the caſe; and likewiſe phoſphoric matches, and a wax candle, when a light cannot be otherwiſe readily procured.

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THE END.